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EXAMINER

MEW, KEVIN D

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|--------------------------------------|--|
| Office Action Summary | Application No. 09/715,787 | Applicant(s) BARANY ET AL. | |
| | Examiner Kevin Mew | Art Unit 2616 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 March 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-16,18-29,31-34 and 36-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 5-12,14-16,18-29,31-33,37-39 and 41 is/are allowed.
- 6) ☒ Claim(s) 1,3,4,13,34,36 and 40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Detailed Action

Response to Amendment

1. Applicant's Remarks/Arguments filed on 3/10/2008 regarding claims 1, 34, 36, 40 have been considered. Claims 1, 3-16, 18-29, 31-34, 36-41 are currently pending in the application. Claims 2, 17, 30 and 35 have been cancelled by applicant.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 3, 34 are rejected under 35 U.S.C. 102(e) as being anticipated by Grubeck et al. (USP 6,449,484).

Regarding claims 1, Grubeck discloses a method of interleaving speech data (**interleaving voice data**, 13, lines 1-48, and Figs. 3 and 9) communicated with a particular mobile station (**a mobile station MS1**, col. 12, lines 31-58, col. 13, lines 1-48, Figs. 3 and 9) over a plurality frames (**over a plurality of TDMA frames 1-32**, col. 13, lines 1-48 and Figs. 3 and 9), comprising:

receiving, by a system from the particular mobile station in a communications session over a wireless channel, a first set of speech data (**receiving, by the base station from the mobile station MS1 in a communication session over a wireless channel CH1, a first set of**

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speech data 1DATA1(3), col. 13, lines 1-48 and Fig. 9), wherein the first set of the speech data has been interleaved by the particular mobile station (**a first set of speech data 1DATA1(3) has been interleaved by the mobile station MS1**, col. 13, lines 1-48 and Fig. 9) according to a first algorithm over plural frames (**according to a first algorithm of putting the 1DATA1(3) over frames 5-8**, col. 13, lines 1-48 and Fig. 9); and

receiving, by a system from the mobile station in a communications session over a wireless channel, a second set of speech data (**receiving, by the base station from the mobile station MS1 in a communication session over a wireless channel CH1, a second set of speech data 1DATA2(3)**, col. 13, lines 1-48 and Fig. 9), wherein the second set of the speech data has been interleaved by the particular mobile station (**a second set of speech data 1DATA2(3) has been interleaved by the mobile station MS1**, col. 13, lines 1-48 and Fig. 9) according to a second algorithm over plural frames (**according to a second algorithm of putting the 1DATA2(3) over frames 9-12**, col. 13, lines 1-48 and Fig. 9).

Regarding claim 3, Grubeck discloses the method of claim 1, wherein the speech data interleaved according to the first or second algorithm comprises speech data interleaved over frames of a multiframe (**speech data interleaved over TDMA frames of a multiframe that comprises frames 1-32**, col. 13, lines 1-48 and Fig. 9).

Regarding claim 34, Grubeck discloses an article comprising at least one storage medium containing instructions that when executed cause a system to perform:

interleaving a first set of speech traffic frame (**a first set of speech data 1DATA1(3) has been interleaved by the mobile station MS1**, col. 13, lines 1-48 and Fig. 9) in a communication session with a radio network over plural bursts (**in a communication session with a radio network over plural frames**, col. 13, lines 1-48 and Figs. 3 and 9) according to a first algorithm (**according to a first algorithm of putting the 1DATA1(3) over frames 5-8**, col. 13, lines 1-48 and Fig. 9); and

interleaving, by the mobile station, a second set of the speech data (**a second set of speech data 1DATA2(3) has been interleaved by the mobile station MS1**, col. 13, lines 1-48 and Fig. 9) in a communication session with a radio network over plural bursts (**in a communication session with a radio network over plural frames**, col. 13, lines 1-48 and Figs. 3 and 9) according to a second algorithm (**according to a first algorithm of putting the 1DATA2(3) over frames 9-12**, col. 13, lines 1-48 and Fig. 9); and

cause the first and second interleaved speech traffic frames to be transmitted to the radio network in the communication session (causing first interleaved voice data TDMA frames and second interleaved voice data TDMA frames to be transmitted to the radio network in the communication session, col. 12, lines 31-58, col. 13, lines 1-48 and Figs. 3 and 9).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grubeck et al. in view of Olofsson et al. (USP 6,134,230).

Regarding claim 4, Grubeck discloses all the aspects of claim 3 above, except fail to explicitly show the method of claim 3, wherein interleaving over frames of the multiframe comprises interleaving over a TDMA multiframe.

However, Olofsson discloses a GPRS system that utilizes 16-bit QAM modulation scheme (col. 2, lines 46-67, col. 3, lines 1-3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the interleaving system and method of Grubeck with the teaching of Olofsson in using 16-bit QAM modulation in a GPRS system such that the multiframe of Grubeck will be formatted as GPRS frame.

The motivation to do so is to provide the capability to vary the user bit rate such that a higher voice quality is achieved by using a higher user bit rate.

5. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grubeck et al. in view of Hakansson et al. (US Publication 2004/0062274).

Regarding claim 13, Grubeck discloses all the aspects of claim 3 above.

Grubeck may not explicitly show each block comprises plural frames, each frame containing plural bursts, the data being carried in data frames interleaved over bursts in the plural frames, and receiving an end-of-data indicating frame to indicate that a data frame is the last data frame; and interleaving the end-of-data indicating frame according to predetermined algorithms,

wherein the end-of-data indicating frame according to the predetermined algorithms enables the end-of-data indicating frame to end within the same block carrying the last data frame.

However, Hakansson discloses a block that comprises plural frames (**see the TDMA frames in each block in Figs. 5 and 6**), each frame containing plural bursts (**see the bursts in each frame in Figs. 5 and 6**), the data being carried in data frames interleaved over bursts in the plural frames (see lines 1-12, paragraph 0027 and Figs. 5 and 6), and a method comprising:

receiving an end-of-data indicating frame to indicate that a data frame is the last data frame (**receiving SID_FIRST frame**, Fig. 5); and

interleaving the end-of-data indicating frame according to predetermined algorithms (**interleaving SID_FIRST frame with the last speech data frames**, see frames 5-8, Fig. 5),

wherein the end-of-data indicating frame (**SID_FIRST frame**, Fig. 5) according to the predetermined algorithms enables the end-of-data indicating frame to end within the same block carrying the last data frame (**by interleaving TDMA frames for the Last Speech frame with SID_FIRST markers to enable the last speech frame to end in the same block carrying the last speech data frame**, see frames 5-8, Fig. 5).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the interleaving system and method of Grubeck with the teaching

of Hakansson in interleaving SID_FIRST frame with the Last Speech frame such that the interleaving system and method of Grubeck will interleave the end-of-data indicating frame according to predetermined algorithms, wherein the end-of-data indicating frame according to the predetermined algorithms enables the end-of-data indicating frame to end within the same block carrying the last data frame.

The motivation to do so is to utilize the unused half bursts so that radio resources are not wasted.

6. Claims 36, 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grubeck et al. in view of Hamalainen (USP 6,072,787).

Regarding claims 36, 40, Grubeck discloses a method of interleaving speech data over a plurality of frames, comprising:

interleaving, by a mobile station, a first set of speech data (**a first set of communication voice signals have been interleaved by mobile station 22**, col. 5, lines 16-23, col. 10, lines 56-67, col. 16, lines 18-50, col. 17, lines 13-16 and Fig. 3) according to a first algorithm over plural frames (**according to the DSP processing for the GSM format over the communication voice signals**, col. 10, lines 56-67) for communication over a wireless channel in a communication session (**in a communication session over a wireless channel in Fig. 1 and col. 12, lines 32-44**); and

interleaving, by the mobile station, a second set of the speech data (**a second set of communication voice signals have been interleaved by mobile station 22**, col. 5, lines 16-23, col. 11, lines 1-26, col. 16, lines 18-50, col. 17, lines 13-16 and Fig. 3) according to a second

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algorithm over plural frames (**according to the DSP processing for the CDMA/TDMA format over the communication voice signals**, col. 11, lines 1-26) for communication over a wireless channel in the communication session (**in a communication session over a wireless channel in Fig. 1 and col. 12, lines 32-44**).

transmitting the interleaved first and second sets of speech data to a radio network over the wireless channel in the communication session (**cause first interleaved voice data in GSM format and second interleaved voice data in CDMA/TDMA format to be transmitted to the radio network in the communication session**, col. 10, lines 56-67, col. 11, lines 1-26, and col. 12, lines 32-44 and Fig. 1).

Grubeck may not explicitly show the telephone interface is coupled to a half-rate mobile station.

However, Hamalainen discloses that a half-rate traffic channel is established with a mobile station in a wireless communication system (col. 2, lines 8-17).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the interleaving schemes of Grubeck with the teaching of Hamalainen in establishing a half-rate traffic channel with a half-rate mobile station such that speech data received at the interleaving system of Grubeck comes from a half-rate mobile station.

The motivation to do so is to increase the capacity of the wireless communications system by doubling the number of subscribers when half-rate channel is established rather than full-rate channel.

Allowable Subject Matter

7. Claims 5-12, 14-16, 18-29, 31-33, 37-39, 41 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

In claim 5, the data is carried in data frame N starting in block B(x), and wherein interleaving the data frame N according to the first and second algorithms comprises interleaving the data frame N over blocks B(x + 2k) and B(x + 2k + 2), where $k = \text{INT}(N/2)$.

In claim 14, wherein the last data frame is data frame M starting in block B(x), wherein, if M is odd, interleaving the data frame M comprises interleaving the data frame M over bursts in the last frame in block B(x) and the first three frames of B(x+2), and wherein interleaving the end-of-data indicating frame comprises interleaving the end-of-data indicating frame over bursts in the last three frames of block B(x+2).

In claim 20, data frames I, I = 0 to M, are received starting in block B(x), the controller adapted to interleave data frame I over blocks B(x + 2k) and B(x + 2k + 2), where $k = \text{INT}(I/2)$.

In claim 38, the first data frame n is interleaved according to the first algorithm in response to n being an even number, and the second data frame is interleaved according to the second algorithm in response to n+1 being an odd number.

In claim 39, an article comprising at least one storage medium containing instructions that when executed cause the system to:

in response to detecting that the first mobile station has entered discontinuous transmission mode, re-assign the wireless channel portion to a second mobile station to enable multiplexing of traffic from the second mobile station onto the wireless channel portion while the first mobile station is in discontinuous transmission mode;

receive a request from the first mobile station to re-acquire the wireless channel portion, the request transmitted by the first mobile station in response to the first mobile station exiting discontinuous transmission mode.

In claim 41, a system for use in a mobile communications network, comprising:

in response to receiving the indication that the first mobile station has entered discontinuous transmission mode, to multiplex traffic from a second mobile station onto the wireless channel portion while the first mobile station is in discontinuous transmission mode, wherein the controller is adapted to further:

receive a request from the first mobile station to re-acquire the wireless channel portion, the request transmitted by the first mobile station in response to the first mobile station exiting discontinuous transmission mode.

Response to Arguments

8. Applicant's arguments filed 3/10/2008 with respect to claims 1, 3-4, 13, 34, 36, 40 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Mew whose telephone number is 571-272-3141. The examiner can normally be reached on 9:00 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham can be reached on 571-272-3179. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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